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THE DISTRIBUTION OF *OENEIS TAYGETE* GEYER IN NORTH AMERICA WITH DESCRIPTIONS OF NEW SUBSPECIES (LEPIDOPTERA, SATYRIDÆ)

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INTRODUCTION

This is the first of a contemplated series of papers devoted to the Nearctic species of *Oeneis* Hübner ([1819], p. 58). It is to be followed by others dealing with single species or groups of related species. In these papers an effort will be made to untangle the involved synonymies of this difficult genus, clearly define the specific entities, especially by figures whenever possible, and show their distribution on this continent. It is hoped that the effort will result in clarifying the status of certain names and eventually lead to a revision of the genus.

The genitalia of *Oeneis* possess some excellent characters for its division into groups, chiefly in the length and breadth of the uncus and the form of the clasps. In *Oeneis taygete* Geyer ([1830], pl. [17]), the species discussed in this paper, the uncus is rather broad, and the clasps have one distinct tooth arising near the middle of the costa. About six other species of Nearctic *Oeneis* comprise the so-called *taygete* group.

The insect itself is comparatively stable in pattern. Wherever it is met it is instantly recognizable so that the subspecific characters are not very prominent or clearly defined unless good series are under examination. It has been thought well, however, to propose three new subspecific names as these differ sufficiently from one another and indicate the limits of the species habitat at its southeastern, south central, and western ranges. It is doubtful whether any more names are warranted.

All reference to *Oeneis bore hanburyi* Watkins (1928, p. 617) has been omitted purposely from this paper. The present author does not believe that *hanburyi* should be referred to *taygete*. It does not have White¹ veins on the under side of the secondaries, which is one of the prominent characters of *taygete*. It is true that this disposition of *hanburyi* leaves a gap in the distribution of *taygete* extending from the western coast of James Bay to the region of the Mackenzie Delta. But this territory, consisting of barren grounds, is quite different from the other regions in which *taygete* flies and may not be ecologically suitable for this species. Also, there may be areas within this region, thus far little explored and collected, where *taygete* does occur but has not yet been reported. However, when the choice of including or excluding *hanburyi* must be made, it seems better for the present to decide against such inclusion.

The author desires to express his sincere appreciation and grateful thanks to Dr. W. R. Sweadner, Curator of Entomology, Carnegie Museum, for the generous loan of all specimens of *taygete* in the collection of that institution. These included long series from remote localities in the far north and were of great assistance in tracing the distribution of this insect.

All photographs herein reproduced were taken by the author. The figures are about four-fifths natural size.

Oeneis taygete taygete Geyer

Figures 1-2

Oeneis Taygete GEYER, in Hübner, [1830], Sammlung exotischer Schmetterlinge, [vol. 3, pl. 17], figs. 1-4.

Chionobas Bootes BOISDUVAL, (*partim*), 1832, Icones historique des lépidoptères, vol. 1, p. 191, pl. 37, figs. 4-6.

Satyrus Bootes, DUPONCHEL, 1832, Histoire naturelle des lépidoptères, supplement, vol. 1, p. 211, pl. 32, figs. 3-5.

Chionobas Bootes BOISDUVAL, 1836, Species général, vol. 1, pl. 13, fig. 3.

Chionobas Bootes, BOISDUVAL AND LECONTE, (*partim*), [1837], Histoire générale . . . des lépidoptères, p. 218.

Papilio Nymphalis F[estivus] *Bootes*, GEYER, in Hübner, [September, 1837-1838], Sammlung Europäischer Schmetterlinge, vol. 1, pl. 207, figs. 1025-1028.

Chionobas Bootes, HERRICH-SCHÄFFER, [1844], . . . Schmetterlinge von Europa, vol. 1, p. 69, pl. 80, figs. 391-392.

Oeneis Taygete, HERRICH-SCHÄFFER, [1844], *op. cit.*, vol. 1, p. 70, [1843], ?pl. 24, figs. 112-115.

¹ All color terms are those employed in "Color standards and color nomenclature" by Robert Ridgway, Washington, D. C., 1912, published by the author.

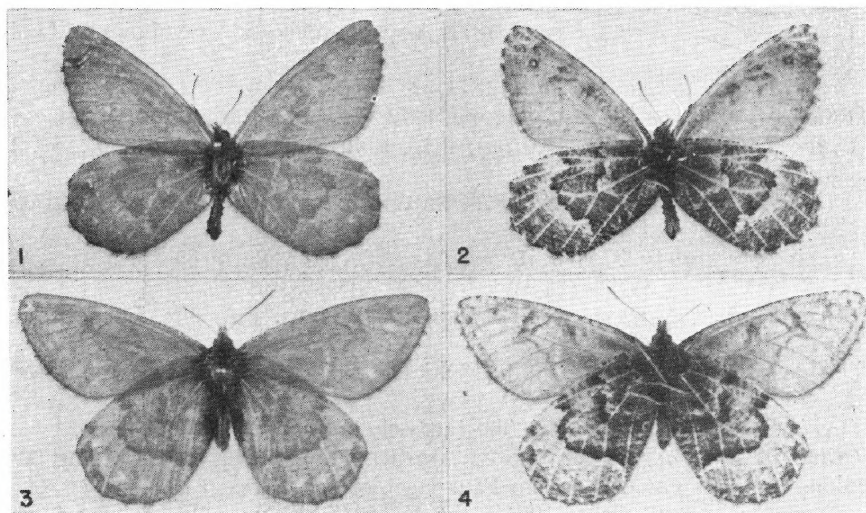
- Hipp[archia] Bore*, MÖSCHLER (*nec* Schneider), 1848, Stettiner Ent. Zeitschr., vol. 9, p. 173.
- Chionobas Taygete*, WESTWOOD, [1851], The genera of diurnal Lepidoptera, vol. 2, p. 383.
- ?*Chionobas Bootes*, WALLENGREN, 1853, Skandnaviens Dagfjärilar, p. 46.
- Chionobas Taygete*, MÖSCHLER, 1860, Wiener Ent. Monatschr., vol. 4, p. 342.
- Chionobas Bootes*, MÖSCHLER, 1860, *ibid.*, vol. 4, p. 342.
- Chinobas* [sic] *Taygete*, MÖSCHLER, 1863, *ibid.*, vol. 7, p. 213.
- Chionobas Bore*, SCUDDER (*nec* Schneider), 1865, Proc. Ent. Soc. Philadelphia, vol. 5, p. 10.
- Chionobas Bootes*, SCUDDER, 1865, *ibid.*, vol. 5, pp. 10, 13.
- Chionobas Taygete*, SCUDDER, 1865, *ibid.*, vol. 5, pp. 10, 13.
- Chionobas Taygete*, MÖSCHLER, 1870, Stettiner Ent. Zeitschr., vol. 31, p. 123.
- Chionobas Bootes*, MÖSCHLER, 1870, *ibid.*, vol. 31, p. 124.
- Oeneis Polixenes Bootes*, KIRBY, 1871, A synonymic catalogue of diurnal Lepidoptera, p. 70.
- Oeneis Polixenes Taygete*, KIRBY, 1871, *op. cit.*, p. 70.
- Chionobas ?Taygete (Bootes)*, COUPER, 1872, Canadian Ent., vol. 4, p. 204.
- Oeneis Taygete*, SCUDDER, (*partim*), 1875, Bull. Buffalo Soc. Nat. Sci., vol. 2, p. 240.
- Chionobas Taygete*, STRECKER, 1878, Butterflies and moths of North America, p. 153.
- Oeneis Bore* variety *Taygete*, LANG, (*partim*), 1884, Butterflies of Europe, p. 270.
- Oeneis Taygete*, ELWES AND EDWARDS, 1893, Trans. Ent. Soc. London, pp. 463, 473.
- Oen[eis] taygete*, HEYNE, in Rühl, [1893], Die palaearktischen Grossschmetterlinge, vol. 1, p. 523.
- Oeneis taygete*, HOLLAND, 1898, The butterfly book, p. 223, pl. 27, fig. 6.
- Oeneis Bore* v. *Taygete*, STAUDINGER AND REBEL, (*partim*), 1901, Catalog der Lepidopteren des Palaearctischen Faunengebietes, p. 52.
- ?*Chionobas Taygete*, BELL, 1901, Ann. Rept. Geol. Surv. Canada, for 1898, new ser., vol. 11, p. 38 m.
- Chionobas taygete*, DYAR, 1902, Proc. Ent. Soc. Washington, vol. 5, p. 42.
- Oeneis bore taygete*, SEITZ, 1908, Macrolepidoptera of the world, vol. 1, p. 119.
- Oeneis taygete* (= *bootes* Bdv.), WEYMER, in Seitz, 1911, Macrolepidoptera of the world, vol. 5, p. 231, pl. 50g.
- Oeneis taygete*, GIBSON, (*partim*), 1920, Report of the Canadian Arctic expedition 1913-18, vol. 3, pt. 1, p. 12i, pl. 1, fig. 1.
- Oeneis taygete*, McDUNNOUGH, 1921, Canadian Ent., vol. 53, p. 82.
- Oeneis taygete*, HOLLAND, 1931, The butterfly book, revised ed., p. 197, pl. 27, fig. 6.
- Oeneis taygete*, DOS PASSOS, 1939, Bull. Cheyenne Mt. Mus., vol. 1, pt. 2, p. S-10.

Since the original description of *taygete* consists of figures only, it may be convenient for those who do not have access to Hübner's work to have before them the following verbal description.

MALE

Expanse 40 to 43.4 mm., neotype 41 mm.

ABOVE: Primaries Raw Umber or Sayal Brown. Costal, outer, and part of inner margins with a narrow, Chestnut-Brown or Cinnamon-Brown line. Costa flecked with Cinnamon-Brown and White along basal area. Patch of darker androconia both sides of median vein extending to end of cell and basally to center of inner margin, lower patch being triangular. Outlined median band and broken submarginal band of under side very faintly showing through. Very seldom with a small, White



FIGS. 1-2. *Oeneis taygete taygete* Geyer, neotype male, upper and under sides.

FIGS. 3-4. *Oeneis bootes* (Boisduval), type male, upper and under sides.

pupilled subapical ocellus ringed with Black (neotype). Veins Antique Brown in basal area, blending into color of wings in discal and limbal areas. Fringes Avellaneous or Tilleul Buff checkered with Chestnut-Brown at veins. Secondaries Sayal Brown or Ochraceous-Buff, with dark median band and broken submarginal band of under side showing through. Basal and discal areas somewhat hairy. Marginal line, veins, and fringes as on primaries.

BELOW: Primaries same color as above but paler. Costa and apex flecked with Light Seal Brown and White, usually with a faint, White subapical point. Faintly outlined median band

slightly produced beyond cell, somewhat darker than wings, more heavily marked along edges and towards costa. Indistinct, broken, Hay's Brown submarginal band becoming obsolete towards inner margin. Veins Aniline Yellow in basal area, flecked with White in apical and limbal areas, blending into color of wings in limbal area. Marginal line and fringes as on upper side. Secondaries with irregular median band of Light Seal Brown, arising in center of costa and terminating at anal angle, flecked with Mars Brown and White between darker borders of band; dentate and crenulate on outer side, more regular on inner side, separated from basal area and broken submarginal band, both same color as center of median band and flecked with White, by basally narrower and distally broader lighter or Pale Olive-Buff areas, narrow submarginal band shading to light area adjoining median band. Costa same color as median band flecked with White. Veins Aniline Yellow flecked with White at base, White beyond. Marginal line of Light Seal Brown. Fringes as on upper side.

Head covered with hairs darker than basal color of wings on upper side; eyes Black; antennae ringed with Black and White, under side of club and distal half of antennae Capucine Yellow; palpi White above and at sides with Black hairs below; thorax and abdomen Black sparsely covered with hairs concolorous with wings on upper side; legs concolorous with basal area of wings on under side.

FEMALE

Expanse 41.5 to 46.5 mm.

ABOVE: Primaries Clay Color or Cinnamon-Buff. Basal and discal areas darker than limbal area. Costal, outer, and part of inner margins with a narrow, Prout's Brown line. Basal area of costa slightly flecked with Clay Color and White. Outlined median band and broken submarginal band of under side very faintly showing through. Very occasionally with a faint, White subapical point and three or more indistinct, Cream-Buff submarginal spots between veins. Veins and fringes as in male. Secondaries Cinnamon or Chamois, with dark basal area, median band, and broken submarginal band of under side showing through. Very occasionally with four or five Cream-Buff submarginal dots between veins. Basal and discal areas somewhat hairy. Marginal line, veins, and fringes as on primaries.

BELOW: Primaries same color as above but somewhat paler. Costa and apex flecked with Vandyke Brown and White, occasionally with a faint, White subapical point. Faintly outlined median band usually slightly produced beyond cell, somewhat darker than wings, more heavily marked along edges and towards costa. Indistinct, broken, Hay's Brown submarginal band becoming obsolete towards inner margin. Very occasionally with one White subapical point and three to four Chamois submarginal dots. Marginal line, veins, and fringes as on upper side. Secondaries with irregular median band of Seal Brown, arising in center of costa and terminating at anal angle, flecked with Verona Brown and White between darker borders of band; dentate and crenulate on outer side, rather regular on inner side, separated from basal area and broken submarginal band, both same color as center of median band and flecked with White, by basally narrower and distally broader lighter or Pale Olive-Buff areas, narrow submarginal band shading to light area adjoining median band. Costa same color as median band flecked with White. Very occasionally with four to five indistinct, Chamois submarginal spots between veins. Marginal line of Vandyke Brown. Veins and fringes as on upper side.

Head, eyes, antennae, palpi, thorax, abdomen, and legs as in male.

At the foot of the plate upon which it is figured the type locality of *Oeneis taygete* Geyer is given as "Labrador." It hereby is fixed as Hopedale, Labrador, latitude 53° N.

A neotype of *Oeneis taygete* Geyer hereby is designated as a male in the Carnegie Museum labeled "450," and "450 *Oeneis Taygete* Hb. ♂ Labrador Ex. Coll. O. Staudinger." Apparently the type does not exist. This is one of the few specimens seen that closely resembles the type in the color of the upper side and having one prominent subapical ocellus on the primaries. Most specimens are paler in color and lack this ocellus, although it often appears inconspicuously on the under side.

Chionobas Bootes Boisduval (*op. cit.*, p. 191), generally considered a synonym of *taygete*, was described from a number of specimens from Cap-Nord, Kamtschatka, Greenland, and Labrador. A male and female are figured by Boisduval (*op. cit.*, pl. 37, figs. 4-6). A supposed type is in the United States National Museum (figs. 3-4), *ex* collection W. Barnes, *ex* collection C. Oberthür, *ex* collection J. A. D. Boisduval. This par-

ticular specimen has never been figured before, and differs in several respects from Boisduval's figures (*loc. cit.*). It is somewhat unusual in that it shows pale submarginal markings between the veins on the upper side of the primaries and secondaries. Usually these markings occur only in the Alaskan and Coloradan subspecies, hereinafter named. Unfortunately it bears no locality data. Nothing resembling it has been seen from Cap-Nord or Labrador. No material from Kamtschatka is available for study, and the insect has never been recorded from Greenland. While this specimen may be one of the type series, it hardly can have come from Labrador. It is believed best to restrict the type, apparently no longer in existence, to the male figured by Boisduval. That male does not bear a bad resemblance to specimens of *taygete* from Labrador. It is probably on the strength of this figure that prior authors have sunk *bootes* for *taygete*. On the other hand the supposed type in the United States National Museum resembles a subspecies of *taygete*, hereinafter named from Alaska. (Compare figs. 3-4 with figs. 9-10.) It is possible therefore, that it is a Kamtschatka specimen. But in view of all the uncertainty it seems advisable to follow previous authors and even go a little further in order to settle this question for all time. Consequently, the type locality of *Chionobas Bootes* Boisduval hereby is fixed as Hopedale, Labrador.

MATERIAL EXAMINED: Three males and four females, Wolstenholme, Province of Quebec, latitude 62° 25' N., longitude 66° 14' W., altitude sea level, July 10-19, 1941 (R. May); two males and one female, Labrador, no dates, *ex* collection Henry Edwards; one male, Labrador, no date, *ex* collection J. Doll, all in the American Museum of Natural History; two males and one female, Labrador, no dates; seven males and seven females, same locality, no dates (A. Stecker); one male, same locality, no date, *ex* collection O. Staudinger; one female, Rama, Labrador, 1886 (Dr. Christ); four males and four females, Ramah, Labrador, no dates (A. Stecker); one male, Port Burwell, northeast entrance to Ungava Bay, Quebec, September 13, 1926 (W. E. C. Todd); one male and one female, Fort Chimo, Ungava, no dates; six males, Port Harrison, Quebec, July 4-7, 1940 (R. May); 54 males and 48 females, Belcher Island, Hudson Bay, no dates; five males, Nastapoka River, west coast of Labrador Peninsula, July 7 and 20, 1915 (O. J. Murie); one male and five

females, Whale River, Hudson Bay, August 13, 1914 (W. E. C. Todd); five males and four females, Little Cape Jones River, east coast Hudson Bay, July 18, 1926 (W. E. C. Todd); nine males and three females, same locality and date (G. M. Sutton); one female, Rupert House, no date, *ex* collection T. L. Mead, all in the Carnegie Museum; one male (genitalic slide no. 251, C. F. dos Passos), [Nain], Labrador, 56° N.-Br., July 23, 1910; one male, Hopedale, Labrador, 55° N., July 19, 1928 (W. W. Perrett); four males (two genitalic slides nos. 5 and 184, and one venation slide no. 56, C. F. dos Passos), same locality, July 16–August 11, 1933; one male, same locality, July 7, 1936; one female, same locality, July 22, 1933; two females (one venation slide no. 57, C. F. dos Passos), same locality, July 8 and 22, 1936; one male, Labrador, May, 1890, 710, *ex* collection O. Staudinger, *ex* collection T. E. Bean; one female, same locality, 1888, 429, *ex* same collections; one female, no data, 21, *ex* collection T. E. Bean; three males (one genitalic slide no. 168, C. F. dos Passos) and five females, Wolstenholme, Ungava, latitude 62° 25', longitude 66° 14', July 1–22, 1941 (R. May); one female, Cape Wolstenholme, Hudson Strait, August 1, 1937 (F. Johansen), all in the collection of the author.

DISTRIBUTION: Quebec, north of the St. Lawrence, Labrador, Ungava, south to James Bay, the islands on the east side of Hudson Bay, and on Baffin Island. It has not been seen from the island of Newfoundland.

***Oeneis taygete gaspeensis*, new subspecies**

Figures 5–8

Oeneis taygete, McDUNNOUGH, 1934, Canadian Ent., vol. 66, p. 86.

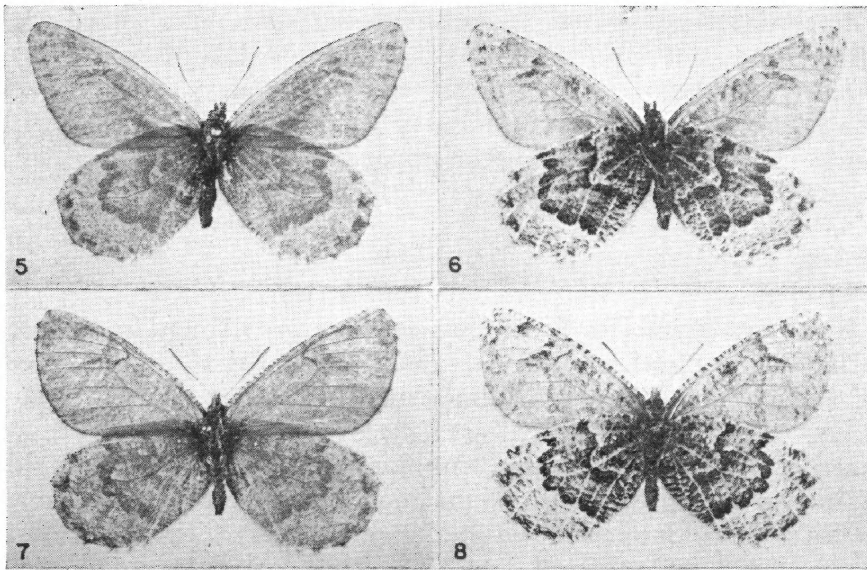
MALE

Expanse 42 to 48.5 mm., holotype 48.5 mm.

ABOVE: Primaries Snuff Brown, Tawny-Olive (holotype), or Cinnamon. Costal, outer, and part of inner margins with a narrow, Bister line. Costa flecked with White along basal area. Patch of darker androconia both sides of median vein extending to end of cell. Outlined median band and broken submarginal band of under side faintly showing through. Veins Ochraceous-Buff in basal and discal areas, blending into color of wings in limbal area. Fringes Pale Olive-Buff checkered with Bister at veins. Secondaries Sayal Brown, Tawny-Olive, or Cinnamon

(holotype), with darker basal area, broad median band, and broken submarginal band of under side showing through. Occasionally with three to four indistinct, light submarginal spots between veins. Basal and discal areas somewhat hairy. Less distinct marginal line; veins and fringes as on primaries.

BELOW: Primaries same color as above but paler. Costa flecked with White and Light Seal Brown or Hay's Brown. Apex flecked with Light Seal Brown and White, occasionally with a White subapical point. Broad median band sharply produced



FIGS. 5-6. *Oeneis taygete gaspeensis* dos Passos, holotype male, upper and under sides.

FIGS. 7-8. *Oeneis taygete gaspeensis* dos Passos, allotype female, upper and under sides.

beyond cell, slightly darker than wings, more heavily marked along edges and towards costa. Broken, Light Seal Brown submarginal band becoming indistinct towards inner margin. Veins Ochraceous-Buff in basal area, flecked with White in apical area, blending into color of wings in limbal area. Marginal line and fringes as on upper side. Secondaries with broad, irregular median band of Light Seal Brown or Hay's Brown, arising in center of costa and terminating at anal angle, flecked more or less with Snuff Brown and little White between darker borders of band; dentate

and crenulate on outer side, more regular on inner side, separated from darker basal area and broken submarginal band, both usually same color as median band and flecked with White, by basally narrower and distally broader lighter or Pale Olive-Buff areas, submarginal band shading to lighter margin and gradually to light area adjoining median band. Costa same color as median band flecked with White. Veins Aniline Yellow flecked with White at base, White beyond. Faint marginal line on outer and inner margins and fringes as on upper side.

Head covered with hairs darker than basal color of wings on upper side; eyes Warm Blackish Brown; antennae ringed with Black and White, under side of club and distal third of antennae Ochraceous-Orange; palpi White above and at sides with Black hairs below; thorax and abdomen Black sparsely covered with hairs concolorous with wings on upper side; legs concolorous with basal area of wings on under side.

FEMALE

Expanse 43.4 to 49.5 mm., allotype 46 mm.

ABOVE: Primaries Sayal Brown, Tawny-Olive (allotype), or Chamois. Basal and discal areas darker than limbal area. Costal, outer, and part of inner margins with a narrow, Bister line. Costa, except limbal area, flecked with White. Outlined median band and broken submarginal band of under side faintly showing through. Veins and fringes as in male. Secondaries same color as primaries but slightly paler, with darker basal area, broad median band, and broken submarginal band of under side distinctly showing through. Occasionally with three to four indistinct, light submarginal spots between veins. Basal and discal areas somewhat hairy. Less distinct marginal line; veins and fringes as on primaries.

BELOW: Primaries same color as above but paler. Costa flecked with White and Seal Brown or Warm Sepia. Apex flecked with Vandyke Brown and White, occasionally with a White subapical point. Broad median band usually sharply produced beyond cell, darker than wings, more heavily marked along edges and towards costa. Broken, Seal Brown submarginal band becoming indistinct towards inner margin. Veins Ochraceous-Buff in basal area, heavily flecked with White in apical area, blending into color of wings in limbal area slightly flecked with White. Marginal line and fringes as on upper side.

Secondaries with broad, irregular median band of Seal Brown or Warm Sepia, arising in center of costa and terminating at anal angle, flecked more or less with Cinnamon-Buff or Clay Color and White between darker borders of band; dentate and crenulate on outer side, more regular on inner side, separated from darker basal area and broken submarginal band, both usually same color as median band and flecked with White, by basally narrower and distally broader lighter or Pale Olive-Buff areas, submarginal band shading to lighter margin and gradually to light area adjoining median band. Costa same color as median band flecked with White. Veins Aniline Yellow flecked with White at base, White beyond. Faint marginal line on outer and inner margins and fringes as on upper side.

Head, eyes, antennae, palpi, thorax, abdomen, and legs as in male.

The author is indebted to Dr. A. E. Brower, Mr. A. C. Frederick, and Dr. A. B. Klots for kindly submitting to him for study the long series of this subspecies collected by them and their generous gifts of many of these specimens.

This subspecies differs from *taygete taygete* in its consistently larger size, its somewhat mottled, darker color on the upper side, and its wider median band on the under side of the secondaries. The under side of the hind wings is less contrasting, owing to the fact that usually the area on both sides of the median band has fewer White scales and the veins are not so prominently flecked with White.

With *gaspeensis* on Mt. Albert, but at lower elevations, two other *Oeneis* occur. One of these, *polixenes* (Fabricius) (1775, p. 484) flies at about 3000 feet and occurs at a slightly earlier date. The other, *chryxus calais* (Scudder) (1865, p. 7) occurs still lower at about 2000 feet, and also earlier in the season. This is the most southern locality known for *polixenes* in the east, but some subspecies of *chryxus* (Doubleday and Hewitson) ([1851], p. 383) occur in more southerly localities in the middle west and the Rocky Mountains.

TYPE MATERIAL: The holotype male is from Mt. Albert, Quebec, July 19, 1940 (A. E. Brower) and the allotype female is from Mt. Albert, Gaspé National Park, Quebec, Arctic Alpine Zone, meadow, altitude 3600 feet, July 18-21, 1940 (A. B. Klots). There are 35 male and 30 female paratypes from Quebec as follows: 18 males (one genitalic slide no. 185, C. F. dos

Passos) and 17 females, Mt. Albert, July 19–22, 1940 (A. E. Brower); 12 males (one genitalic slide no. 170, C. F. dos Passos) and nine females, Mt. Albert, Gaspé County, 3500 feet, July 19, 1940 (A. C. Frederick); five males and four females, Mt. Albert, Gaspé National Park, Arctic Alpine Zone, meadow, altitudes 3600–3750 feet, July 18–21, 1940 (A. B. Klots). The holotype, *ex* collection A. E. Brower, and allotype, *ex* collection A. B. Klots, are in the American Museum of Natural History, both *ex* collection C. F. dos Passos. One pair of paratypes, *ex* collections A. E. Brower and A. C. Frederick, is in the Carnegie Museum, *ex* collection C. F. dos Passos. Of the above paratypes 14 males and 12 females are in the collection of A. E. Brower, 10 males and seven females are in the collection of A. C. Frederick, and five males and four females are in the collection of A. B. Klots, some of which have been distributed. The remaining paratypes are in the collection of the author.

ADDITIONAL MATERIAL EXAMINED: The author has examined also the following specimens of *gaspeensis* from Quebec, but they are not made paratypes: eight males and one female, Mt. Albert, Gaspé County, 3500 feet, July 18–19, 1940 (A. C. Frederick); 18 males (two genitalic slides nos. 161 and 164, C. F. dos Passos) and nine females, Mt. Albert, Gaspé National Park, Arctic Alpine Zone, meadow, altitude 3500–3750 feet, July 18–21, 1940 (A. B. Klots), all in the collection of the author.

DISTRIBUTION: Quebec, south of the St. Lawrence.

***Oeneis taygete fordi*, new subspecies**

Figures 9–12

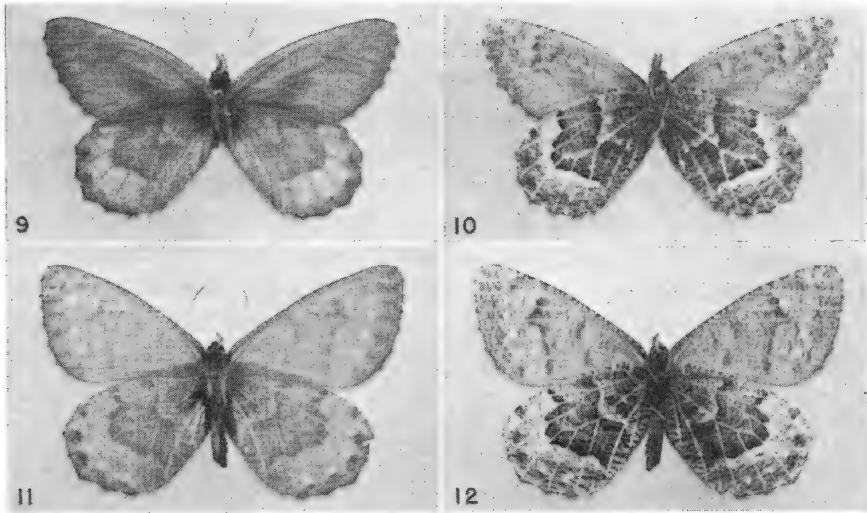
Chionobas Taygete, EDWARDS, 1886, Report upon diurnal Lepidoptera collected in Alaska by E. W. Nelson, pt. 4, Insects, p. 329.

MALE

Expanse 39 to 47 mm., holotype 43 mm.

ABOVE: Primaries Cinnamon-Brown, Ochraceous-Tawny (holotype), or Cinnamon. Costal, outer, and part of inner margins with a distinct, narrow, Chestnut-Brown or Brussels Brown line. Costa slightly flecked with White along basal area. Patch of darker androconia both sides of median vein extending to end of cell. Slight indication of broken submarginal band of under side showing through. Occasionally with a White subapical point. Veins Brussels Brown in basal and discal areas, blending

into color of wings in limbal area. Fringes Avellaneous or Cartridge Buff checkered with Chestnut-Brown or Brussels Brown at veins. Secondaries Cinnamon-Brown, Antimony Yellow (holotype), or Honey Yellow, with dark median band and broken submarginal band of under side showing through. Sometimes with four or five Cream-Buff or Cartridge Buff submarginal dots between veins. Basal and discal areas slightly hairy. Marginal line, veins, and fringes as on primaries.



FIGS. 9-10. *Oeneis taygete fordii* dos Passos, holotype male, upper and under sides.

FIGS. 11-12. *Oeneis taygete fordii* dos Passos, allotype female, upper and under sides.

BELOW: Primaries same color as above but paler. Costa and apex flecked with Seal Brown, often with a White subapical point. Broad median band bluntly produced beyond cell, slightly darker than wings, more heavily marked along edges and towards costa. Sometimes with broken, indistinct, Seal Brown submarginal band disappearing towards inner margin. Two to four small, Cartridge Buff submarginal spots between veins. Veins Ochraceous-Buff in basal area, flecked with White in apical area, blending into color of wings in limbal area. Marginal line and fringes as on upper side. Secondaries with broad, irregular median band of Carob Brown or Seal Brown, arising in

center of costa and terminating at anal angle, flecked more or less with Ochraceous-Tawny or Cinnamon-Brown and White between darker borders of band; slightly dentate and crenulate on outer side, more regular on inner side, separated from basal area and broken submarginal band, both usually same color as center of median band, sometimes same color as borders of median band, and flecked with White, by basally narrower and distally broader lighter or Pale Olive-Buff areas, submarginal band shading to light area adjoining median band. Costa same color as median band flecked with White. Five or six small, White submarginal points between veins. Veins Cream-Buff, heavily flecked with White at base, White beyond. Marginal line of Light Seal Brown. Fringes as on upper side.

Head covered with hairs darker than basal color of wings on upper side; eyes Liver Brown; antennae annulated, White, shading into Black and White on upper side, under side of club and distal half of antennae Salmon-Orange; palpi White above and at sides with Prout's Brown hairs below; thorax and abdomen hairy, Prout's Brown; legs concolorous with basal area of wings on under side.

FEMALE

Expanse 39.5 to 48 mm., allotype 45 mm.

ABOVE: Primaries Tawny-Olive, Clay Color (allotype), or Honey Yellow. Basal and limbal areas lighter than discal area. Costal, outer, and part of inner margins with a narrow, Brussels Brown or Chestnut-Brown line. Costa, except limbal area, flecked with White. Median band and broken submarginal band of under side distinctly showing through, both somewhat darker than wings, the latter distinct in some specimens and resulting in short, dark lines between veins. Occasionally with a faint, White subapical point and three or more indistinct, Cream-Buff submarginal spots between veins. Veins and fringes as in male. Secondaries same color as primaries but slightly paler, with dark median band and broken submarginal band of under side showing through. Sometimes with four or five Cream-Buff submarginal dots between veins. Basal and discal areas somewhat hairy. Less distinct marginal line; veins and fringes as on primaries.

BELOW: Primaries same color as above but paler. Costa and apex flecked with Vandyke Brown and White. Broad median

band bluntly produced beyond cell, darker than wings, more heavily marked along edges and towards costa. Broken, Light Seal Brown submarginal band sometimes becoming obsolete at inner margin. One White subapical point and three to four Chamois submarginal dots. Veins Antimony Yellow in basal area, flecked with White in apical area, blending into color of wings in limbal area. Marginal line and fringes as on upper side. Secondaries with broad, irregular median band of Light Seal Brown or Vandyke Brown, arising in center of costa and terminating at anal angle, flecked more or less with Sayal Brown, Tawny-Olive, or Cinnamon-Brown and White between darker borders of band; dentate and crenulate on outer side, more regular on inner side, separated from basal area and broken submarginal band, both usually same color as center of median band, sometimes same color as borders of median band, and flecked with White, by basally narrower and distally broader lighter or Pale Olive-Buff areas, submarginal band shading to light area adjoining median band. Costa same color as median band flecked with White. Usually with four to five Chamois, sometimes White, submarginal points between veins. Marginal line, veins, and fringes as on upper side.

Head, eyes, antennae, palpi, thorax, abdomen, and legs as in male.

This subspecies is named for my friend, Dr. E. B. Ford, Reader in Genetics in the University of Oxford.

Oeneis taygete fordii differs from *taygete taygete* in its color, prominent submarginal markings on the primaries and secondaries of the upper and under sides of both sexes, and in the color of the hairs on the head, thorax, and abdomen. These are the most obvious differences, but there are others as will appear from a comparison of the descriptions.

TYPE MATERIAL: The holotype male (genitalic slide no. 109, C. F. dos Passos) and the allotype female are from the Kuskokwim River, Alaska, no dates (A. Stecker), *ex* collection Carnegie Museum. There are 10 paratypes from Alaska as follows: three males and three females, Kuskokwim River, no dates (A. Stecker), *ex* collection W. J. Holland, *ex* collection Carnegie Museum; one male, same locality and collector, no date, *ex* collection Carnegie Museum; one male, Alaska, North America, 80, no date; two females same locality, 81 and 82, no dates. The holotype and allotype are in the Carnegie

Museum, and one pair of paratypes is in the American Museum of Natural History, all *ex* collection C. F. dos Passos. A pair of paratypes will be sent to the University Museum, Oxford. The remaining paratypes are in the collection of the author.

ADDITIONAL MATERIAL EXAMINED: The author has examined also the following specimens of *fordi*, but they are not made paratypes: one male and one female, Kuskokwim River, no dates (A. Stecker); one male, Teller, Alaska, July 18, 1928, all in the American Museum of Natural History; one male, Alaska, no date; one female, North Alaska, no date; one male, Mt. McKinley, Alaska, July, 1925, *ex* collection W. R. Sweadner; 74 males and 21 females, Kuskokwim River, no dates except one female, 1907 (A. Stecker), *ex* collection W. J. Holland; one male, St. Michaels, Alaska, no date; one female, St. Michael, Alaska, July 4, 1904 (S. H. Young) all in the Carnegie Museum; one male, Fort Yukon, Alaska, 66.5° N., no date; one male and two females, Alaska, no dates, *ex* collection O. Staudinger; one male, Whitehorse, Yukon Territory, Canada, June 16, all in the collection of the author.

DISTRIBUTION: Alaska, Yukon, District of Mackenzie.

***Oeneis taygete edwardsi*, new subspecies**

Figures 13-16

?*Chionobas Taygete*, EDWARDS, 1885, Canadian Ent., vol. 17, p. 158 (footnote).

?*C[hionobas] Taygete*, EDWARDS, 1886, *ibid.*, vol. 18, p. 16.

?*Chionobas Bore*, EDWARDS (*nec* Schneider), 1891, *ibid.*, vol. 23, p. 16.

?*[Chionobas] Taygete*, EDWARDS, 1891, *ibid.*, vol. 23, p. 32.

?*Oeneis bore*, BUTLER (*nec* Schneider), 1893, Ann. Mag. Nat. Hist., ser. 6, vol. 12, p. 12.

Oeneis taygete, McDUNNOUGH, 1922, Canadian Ent., vol. 54, p. 136.

Oeneis taygete, BOWMAN, 1923, *ibid.*, vol. 55, p. 71.

Oeneis taygete, BLACKMORE, 1927, Check-list of the Macrolepidoptera of British Columbia, p. 8.

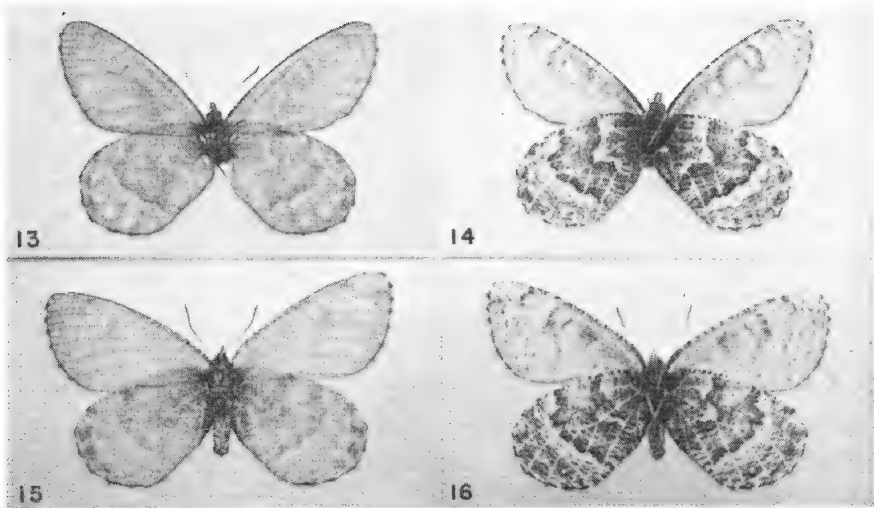
Oeneis taygete, CADBURY, 3D, 1937, Proc. Acad. Nat. Sci. Philadelphia, vol. 89, p. 397.

MALE

Expanse 36 to 41.5 mm., holotype 41 mm.

ABOVE: Primaries Snuff Brown (holotype) or Wood Brown. Costal, outer, and part of inner margins with a very distinct, narrow, Brussels Brown or Raw Umber line. Faint patch of androconia both sides of median vein extending almost to end of

cell. Veins Orange-Buff in basal area, blending into color of wings in discal and limbal areas. Fringes Avellaneous or Tilleul Buff broadly checkered with Brussels Brown or Raw Umber at veins. Secondaries same color as primaries but slightly paler, with dark median band and indistinct, broken submarginal band of under side faintly showing through. Occasionally with four or five Cream-Buff or Chamois submarginal dots between veins. Basal and discal areas sparsely covered with hairs. Marginal line, veins, and fringes as on primaries.



FIGS. 13-14. *Oeneis taygete edwardsi* dos Passos, holotype male, upper and under sides.

FIGS. 15-16. *Oeneis taygete edwardsi* dos Passos, allotype female, upper and under sides.

BELOW: Primaries same color as above but slightly paler. Costa and apex flecked with Hay's Brown. Faintly outlined, broad median band bluntly produced beyond cell, slightly darker than wings, more heavily marked in and beyond cell, nearly obsolete at inner margin. Indistinct, Hay's Brown submarginal band becoming obsolete halfway to inner margin. Veins Orange-Buff in basal area, flecked with White in apical area, blending into color of wings in limbal area. Marginal line and fringes as on upper side. Secondaries with broad, irregular median band of Warm Blackish Brown or Seal Brown, arising in center of costa and terminating at anal angle, flecked more or

less with Snuff Brown and White between darker borders of band; slightly dentate and crenulate on outer side, more regular on inner side, separated from basal area and broken submarginal band, both same color as center of median band and flecked with White, by basally narrower and distally broader lighter or Pale Olive-Buff areas, submarginal band shading to light area adjoining median band. Costa same color as median band flecked with White. Occasionally with five or six small, Cream-Buff submarginal points between veins. Veins Orange-Buff flecked with White at base, White beyond. Marginal line of Seal Brown. Fringes as on upper side.

Head covered with hairs darker than basal color of wings on upper side; eyes Chestnut-Brown; antennae ringed with Black and White, under side of club and distal half of antennae Capucine Yellow; palpi White above and at sides with Vandyke Brown hairs below; thorax and abdomen Black; legs concolorous with basal area of wings on under side.

FEMALE

Expanse 43 to 46 mm., allotype 44 mm.

ABOVE: Primaries Clay Color (allotype) or Honey Yellow. Basal and discal areas somewhat darker than limbal area. Costal, outer, and part of inner margins with a very distinct, narrow, Clove Brown line. Costa, except limbal area, flecked with Clove Brown and Smoke Gray. Outlined median band and indistinct, narrow submarginal band of under side faintly showing through, both somewhat darker than wings. Occasionally with a faint, White subapical point and three or more indistinct, Cream-Buff submarginal dots between veins. Veins Orange-Buff in basal and discal areas, blending into color of wings in limbal area. Fringes as in male. Secondaries same color as primaries, with dark median band and broken submarginal band of under side showing through. Usually four to five Cream-Buff submarginal spots between veins. Basal and discal areas somewhat hairy. Rather less distinct marginal line; veins and fringes as on primaries.

BELOW: Primaries same color as above but paler. Costa and apex flecked with Vandyke Brown and White. Faintly outlined median band, sometimes obsolete, bluntly produced beyond cell, darker than wings, more heavily marked in and beyond cell. Faint, Clove Brown submarginal band sometimes becoming

obsolete at inner margin. An occasional White subapical point and another near inner angle. Veins Orange-Buff in basal area, flecked with White in apical area, blending into color of wings in limbal area. Marginal line and fringes as on upper side. Secondaries with broad, irregular median band of Warm Blackish Brown or Seal Brown, arising in center of costa and terminating at anal angle, flecked more or less with Snuff Brown and White between darker borders of band; dentate and crenulate on outer side, more regular on inner side, separated from basal area and broken submarginal band, both same color as center of median band and flecked with White, by basally narrower and distally broader lighter or Pale Olive-Buff areas, submarginal band shading to light area adjoining median band. Costa same color as median band flecked with White. Usually with four to five White, occasionally Chamois, submarginal spots between veins. Veins Orange-Buff in basal area, blending into White at median band. Distinct marginal line and fringes as on upper side.

Head, eyes, antennae, palpi, thorax, abdomen, and legs as in male.

This subspecies differs from the other subspecies of *taygete* in that the marginal lines on both wings are much more distinct. The entire insect has a frailer appearance, all markings including the androconia being paler. Superficially *edwardsi* is nearest to *taygete taygete*, the more southern specimens of which from Alberta and British Columbia are referred to this new name.

Many other species of *Oeneis* also occur in Colorado, Wyoming, and Montana. At the highest elevation in Colorado *polixenes* has been taken. From the lowest elevations *jutta reducta* McDunnough (1929, p. 105) has been recorded. At intermediate levels are found *alberta oslari* (Skinner) (1911, p. 220), *lucilla* Barnes and McDunnough (1918, p. 69), *uhleri* (Reakirt) (1866, p. 143), *chryxus*, and *brucei* (Edwards) (1891, p. 33). Of all the states and provinces, Colorado appears to have the largest *Oeneis* population. According to McDunnough (*tom. cit.*, p. 136) *taygete (edwardsi)* and *brucei* fly together in southern Alberta on dry, grassy hillsides.

TYPE MATERIAL: The holotype male (genitalic slide no. 162, C. F. dos Passos) is from San Juan Mountains, Hinsdale County, Colorado, August 4, 1941, and the allotype female is from Hinsdale County, Colorado, same date (both B. Rotger). There are 17 paratypes as follows: one male (genitalic slide no. 196, C. F.

dos Passos), Beartooth Plateau, [Montana or Wyoming], July 28, 1933; six males, Beartooth Plateau, Beartooth Mountains, Park County, Wyoming, July 29, 1942; three males and one female, Beartooth Plateau, Beartooth Mountains, Carbon County, Montana, July 28, 1942; one female, same locality, August 9, 1941; one female, same locality, August 12, 1941 (all G. H. and J. L. Sperry); two males (one genitalic slide no. 169, C. F. dos Passos), Marvel, La Plata County, Colorado, August 4, 1941; one male, same locality, August 6, 1941; one female, San Juan Mountains, Hinsdale County, Colorado, August 4, 1941 (all B. Rotger). The holotype and allotype are in the American Museum of Natural History, *ex* collection C. F. dos Passos. The paratypes are in the collection of the author.

DISTRIBUTION: Southern Alberta, southern British Columbia, Montana, Wyoming, Colorado.

SUMMARY

No one, and least of all the author, appreciates the great difficulty involved in preparing satisfactory verbal descriptions of the *Oeneis* discussed herein. For that reason it is especially important to refer to the figures where, it is believed, the different characters described and discussed in this paper stand out rather clearly. Furthermore, for the benefit of those who do not have Ridgway's work at hand, a brief résumé of the color differences is given below in non-technical color terms. It should be observed that the females vary more in color than the males.

	MALES	FEMALES
<i>taygete taygete</i>	Yellow brown	Usually yellow brown, occasionally very pale
<i>taygete gaspeensis</i>	Chocolate brown	Pale chocolate brown, occasionally very pale
<i>taygete fordi</i>	Orange brown	Usually orange to pale orange brown, occasionally pale chocolate brown
<i>taygete edwardsi</i>	Gray brown	Gray yellow brown or yellow brown

With the foregoing aids it is believed that there should be little or no difficulty in appreciating the distinctions pointed out in the text.

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